

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 20 OCT 2005

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Applicant's or agent's file reference B14441.3 ALP		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP2004/052446		International filing date (day/month/year) 05.10.2004	Priority date (day/month/year) 14.10.2003	
International Patent Classification (IPC) or national classification and IPC A61N1/36				
Applicant COMMISSARIAT A L'ENERGIE ATOMIQUE ET AL.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 5 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 02.07.2005		Date of completion of this report 21.10.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Loveniers, K Telephone No. +31 70 340-8983		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/052446

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-27 as originally filed

Claims, Numbers

1-22 received on 02.07.2005 with letter of 24.06.2005

Drawings, Sheets

1/10-10/10 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/EP2004/052446

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-22
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-22
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V.

1 The following documents are referred to in this communication:

D1 : US 2002/077670 A1 (ARCHER STEPHEN T ET AL) 20 June 2002 (2002-06-20)

D2 : US 2003/125786 A1 (FOWLER BRAD ET AL) 3 July 2003 (2003-07-03)

2 **INDEPENDENT CLAIM 1**

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claim 1** does not involve an inventive step in the sense of **Article 33(3) PCT**.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A cerebral electrostimulation device (see par. 15) containing at least one commutation device (see fig. 13) comprising

- switching means (312);
- at least one input (310) and several outputs each connected to at least one biocompatible electrode (314) or at least one active area of a biocompatible electrode, the commutation device being used to selectively connect at least one input to one or more outputs (see par. 86).

The subject-matter of claim 1 therefore differs from this known electrostimulation device in that the switching means comprises electromechanical bistable switches included in a microelectromechanical system.

The problem to be solved by the present invention may therefore be regarded as how to consume less energy in a switching system (see application's description, p. 5, lines 2-5).

This solution is however widely known to a person skilled in the art of switches, hence rendering it obvious to the skilled man to apply such electromechanical bistable switches in the microstimulator of D1, thereby arriving at a microstimulator according to claim 1.

2.2 For the sake of completeness, it is pointed out that also when he starts from document D2 (see figs. 8, 22; par. 111, last but one sentence; and par. 126), the skilled person would choose the well-known feature of the electromechanical bistables without the exercise of inventive skill, in order to solve the problem posed.

3 INDEPENDENT CLAIM 16

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claim 16** does not involve an inventive step in the sense of **Article 33(3) PCT**, for the same reasons as mentioned in par. 2 of the present communication, mutatis mutandis.

4 DEPENDENT CLAIMS 2-15, 17-22

Dependent **claims 2-15, 17-22** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (**Article 33(3) PCT**):

- claim 2: see D1, par. 126, last sentence
- claim 3: see D1, par. 126: "external programmer"
- claims 4, 5: see D1, par. 126
- claim 6: see D2, par. 112, last sentence
- claims 7, 8: see D1, fig. 22, (636); or see D2, fig. 8, (810)
- claims 9, 10: see D2, par. 111
- claim 11: see D1, par. 86, first sentence
- claims 12, 17: see D1, fig. 22, (622, 624)
- claims 13, 18: see D1, par. 85, last sentence
- claims 14, 19: see D1, fig. 13, (316, 418, 338)
- claim 15: see D1, fig. 22, (622)
- claim 20: see D1, par. 2: implantable neurostimulator
- claims 21, 22: see D1, par. 86, first sentence

CLAIMS

1. Cerebral electrostimulation device containing at least one commutation device (300) comprising:

5 - switching means comprising electromechanical bistable switches included in a microelectromechanical system,

 - at least one input and several outputs each connected to at least one biocompatible electrode
10 (200) or at least one active area (202) of a biocompatible electrode (200), the commutation device (300) being used to selectively connect at least one input to one or more outputs.

15 2. Cerebral electrostimulation device according to claim 1, the commutation device (300) also containing one or more antennas.

 3. Cerebral electrostimulation device
20 according to either claim 1 or 2, also containing one control device (400) external to the commutation device (300) capable of controlling or programming the commutation device (300) by radio and / or electrical signals.

25 4. Cerebral electrostimulation device according to claim 3, the control device (400) containing remote transmission means.

5. Cerebral electrostimulation device according to claim 3, the control device (400) containing remote transmission means to send radio frequency signals Sc.

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6. Cerebral electrostimulation device according to one of claims 3 to 5, also containing means (500) capable of programming the control device (400).

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7. Cerebral electrostimulation device according to one of claims 1 to 6, also containing power supply means for supplying power to the commutation device (300).

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8. Cerebral electrostimulation device according to claim 7, the power supply means including a power supply (321) integrated in the commutation device (300).

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9. Cerebral electrostimulation device according to either claim 7 or 8, the power supply means comprising a remote power supply device.

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10. Cerebral electrostimulation device according to claim 9, in which the remote transmission device comprises at least one energy source (415) external to the commutation device (300), capable of supplying energy to the commutation device in the form of a radio wave and energy collection means integrated into the commutation device (300) capable of picking up

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said energy, the energy source (415) being integrated into the control device (200).

11. Cerebral electrostimulation device
5 according to one of claims 1 to 10, the
electrostimulation device comprising stimulation
electrodes and / or measurement electrodes and / or a
combination of stimulation electrodes and measurement
electrodes.

10

12. Cerebral electrostimulation device
according to one of claims 1 to 11, also comprising at
least one stimulator (100) and / or one measurement
device (600).

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13. Cerebral electrostimulation device
according to claim 12, comprising at least one
stimulator (100) provided with an integrated power
supply (101).

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14. Cerebral electrostimulation device
according to either claim 12 or 13, the stimulator
(100) comprising one or more channels connected to one
or more inputs of the commutation device (300).

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15. Cerebral electrostimulation device
according to one of claims 12 to 14, comprising at
least one measurement device (600) with one or more
channels connected to one or more inputs of the
30 commutation device (300).

16. Cerebral electrostimulation device comprising at least one interconnection device (333) including:

- switching means comprising
5 electromechanical bistable switches included in a microelectromechanical system,
- at least one input, and several outputs each connected to at least one biocompatible electrode (200) or at least one active area (202) of a
10 biocompatible electrode (200), the interconnection device (333) used to connect each of one or more predetermined inputs to one or more predetermined outputs.

15 17. Cerebral electrostimulation device according to claim 16, also comprising at least one stimulator (100).

20 18. Cerebral electrostimulation device according to claim 17, the stimulator (100) being provided with an integrated power supply (101).

25 19. Cerebral electrostimulation device according to one of claims 1 to 18, in which the commutation device (300) or the interconnection device (333) comprises several inputs, the commutation device (300) being used to connect each input to one or more outputs.

30 20. Cerebral electrostimulation device according to one of claims 1 to 19, the commutation

device (300) or interconnection device (333) being biocompatible.

21. Cerebral electrostimulation device
5 according to one of claims 1 to 20, the commutation device (300) or interconnection device (333) comprising switching means.

22. Cerebral electrostimulation device
10 according to either claim 20 or 21, in which the switching means are arranged in matrix form.